AMENDMENTS TO THE CLAIMS

Claims 1-12 (Cancelled)

Claim 13. (New): A method for distance measurement using a radio system, comprising:

measuring a coarse distance between a first radio transceiver and a second radio transceiver, the coarse distance representing a first distance measurement between the first radio transceiver and the second radio transceiver in coarse resolution;

measuring a fine distance between the first radio transceiver and the second radio transceiver, the fine distance representing a second distance measurement between the first radio transceiver and the second radio transceiver in fine resolution,

determining the distance between the first radio transceiver and the second radio transceiver using the first distance measurement in conjunction with the second distance measurement.

Claim 14. (New): The method for distance measurement of claim 1, further comprising:

generating a transmit timing signal;

generating a receive timing signal; and

generating a time delay signal based on the transmit timing signal and the receive timing signal; and

wherein the first distance measurement is determined using the time delay signal.

Claim 15. (New): The method for distance measurement of claim 2, further comprising:

generating a first timing signal, TX(I), using the transmit timing signal;

generating a second timing signal, RX, using the receive timing signal; and

generating a third timing signal, TX(Q), using at least one of the transmit timing signal and TX(I).

Claim 16. (New): The method for distance measurement of claim 3, further comprising:

generating an in-phase (I) signal using the TX(I) and RX signals; and

generating a quadrature (Q) signal using the TX(Q) and RX signals,

wherein the second distance measurement is determined using the in-phase (I) signal and the quadrature (Q) signal.

Claim 17. (New): The method for distance measurement of claim 4, further comprising:

converting the in-phase (I) signal into a I_{dc} signal having an average dc value of the in-phase (I) signal; and

converting the quadrature (Q) signal into a Q_{dc} signal having an average dc value of the quadrature (Q) signal,

wherein the second distance measurement is determined using the I_{dc} signal and the Q_{dc} signal.

Claim 18. (New): The method for distance measurement of claim 5, wherein converting the in-phase (I) signal into a I_{dc} signal comprises:

low pass filtering the in-phase (I) signal to remove the ac component.

Claim 19. (New): The method for distance measurement of claim 5, wherein converting the quadrature (Q) signal into a Q_{dc} signal comprises:

low pass filtering the quadrature (Q) signal to remove the ac component.

Claim 20. (New): The method for distance measurement of claim 5, further comprising:

converting the I_{dc} signal into a first digital output (I_1) signal; and

converting the Q_{dc} signal into a second digital output (Q_1) signal,

wherein the second distance measurement is determined using the I_1 signal and the Q_1 signal.

Claim 21. (New): The method for distance measurement of claim 8, further comprising:

evaluating an I_z variable from the I_1 signal; and

evaluating a Q_z variable from the Q_1 signal,

wherein the second distance measurement is determined using the I_z variable and the Q_z variable.

Claim 22. (New): A system for measuring distance using a radio system, comprising:

a coarse distance measurement circuit to measure a coarse distance between a first radio transceiver and a second radio transceiver, the coarse distance representing a first distance measurement between the first radio transceiver and the second radio transceiver in coarse resolution; and

a fine distance measurement circuit to measure a fine distance between the first radio transceiver and the second radio transceiver, the fine distance representing a second

distance measurement between the first radio transceiver and the second radio transceiver in fine resolution,

wherein the distance between the first radio transceiver and the second radio transceiver is determined using the first distance measurement in conjunction with the second distance measurement.

Claim 23. (New): The system for measuring distance of claim 10, further comprising:

a transmit time base generator to generate a transmit timing signal;

a receive time base generator to generate a receive timing signal; and

a time delay signal generator to generate a time delay signal based on the transmit timing signal and the receive timing signal,

wherein the first distance measurement is determined using the time delay signal.

Claim 24. (New): The system for measuring distance of claim 11, further comprising:

a means for generating a first timing signal, TX(I), using the transmit timing signal;

a means for generating a second timing signal, RX, using the receive timing signal; and

a means for generating a third timing signal, TX(Q), using at least one of the transmit timing signal and TX(I).

Claim 25. (New): The system for measuring distance of claim 12, further comprising:

an in-phase (I) signal generator to generate an in-phase (I) signal using the TX(I) and RX signals; and

a quadrature (Q) signal generator to generate a quadrature (Q) signal using the TX(Q) and RX signals,

wherein the second distance measurement is determined using the in-phase (I) signal and the quadrature (Q) signal.

Claim 26. (New): The system for measuring distance of claim 13, further comprising:

a first converter to convert the in-phase (I) signal into a I_{dc} signal having an average dc value of the in-phase (I) signal; and

a second converter to convert the quadrature (Q) signal into a Q_{dc} signal having an average dc value of the quadrature (Q) signal,

wherein the second distance measurement is determined using the I_{dc} signal and the Q_{dc} signal.

Claim 27. (New): The system for measuring distance of claim 14, wherein the first converter comprises:

a low pass filter to remove the ac component from the in-phase (I) signal.

Claim 28. (New): The system for measuring distance of claim 14, wherein the second converter comprises:

a low pass filter to remove the ac component from the quadrature (Q) signal.

Claim 29. (New): The system for measuring distance of claim 14, further comprising:

a first A/D converter to convert the I_{dc} signal into a first digital output (I_1) signal; and

a second A/D converter to convert the Q_{dc} signal into a second digital output (Q_1) signal,

wherein the second distance measurement is determined using the I_1 signal and the Q_1 signal.

Claim 30. (New): The system for measuring distance of claim 17, further comprising:

a processor for evaluating an I_z variable from the I_1 signal and a Q_z variable from the Q_1 signal,

wherein the second distance measurement is determined using the I_z and Q_z variables.

Claim 31. (New): A radio transceiver, comprising:

a coarse distance measurement circuit to measure a coarse distance between the first radio transceiver and a second radio transceiver, the coarse distance representing a first distance measurement between the first radio transceiver and the second radio transceiver in coarse resolution; and

a fine distance measurement circuit to measure a fine distance between the first radio transceiver and the second radio transceiver, the fine distance representing a second distance measurement between the first radio transceiver and the second radio transceiver in fine resolution,

wherein the distance between the first radio transceiver and the second radio transceiver is determined using the first distance measurement in conjunction with the second distance measurement.

Claim 32. (New): A method for measuring distance, comprising:

performing a coarse distance measurement of a distance between a first radio transceiver and a second radio transceiver, said coarse distance measurement having a first resolution;

performing a fine distance measurement of the distance between the first radio transceiver and the second radio transceiver, said fine distance measurement having a second resolution that is more precise than said first resolution; and

determining the distance between the first radio transceiver and the second radio transceiver using said coarse distance measurement and said fine distance measurement.

Claim 33. (New): The method for measuring distance of claim 20, wherein said second resolution corresponds to the first resolution divided by an integer greater than 1.

Claim 34. (New): The method for measuring distance of claim 20, wherein said fine distance measurement is performed before, after or parallel to performing said coarse distance measurement.

Claim 35. (New): The method for measuring distance of claim 20, wherein each of said first radio transceiver and said second radio transceiver comprises one of a cellular phone, a PCS phone, an impulse radio, and a non-impulse radio.

Claim 36. (New): The method for measuring distance of claim 20, wherein each of said first radio transceiver and said second radio transceiver uses an optical signal.

Claim 37. (New): The method for measuring distance of claim 24, wherein said optical signal is generated by at least one of a laser and a light emitting diode (LED).